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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/560,819	04/28/2000	Hiroshi Oagawa	1982-0149P	5103

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EXAMINER
ROY, SIKHA

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 02/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/560,819	OAGAWA, HIROSHI	
	Examiner	Art Unit	
	Sikha Roy	2879	

-- The MAILING DATE of this communication appears on the cov r she t with the correspondence addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,789,021 to Dooms et al. in view of U. S. Patent 4,574,102 to Arakawa et al.

Dooms et al. disclose (column 5 lines10-13, 40-50,60-65) a radiation conversion panel (radiation sensitive luminescent article in the form of a panel) comprising stimulable phosphor layers dispersed in sufficient binder providing structural coherence. The image quality, particularly sharpness depends on the optical scattering phenomena in the phosphor layer being determined by the thickness of the layer and the amount of binder present in the phosphor layers. Dooms et al. notes that phosphor layers have same or a different layer thickness and/or a different weight ratio amount of phosphor to binder.

Claim 1 differs from Dooms et al. in that Dooms et al. do not exemplify the amount by weight of the binder to the stimulable phosphor in the uppermost layer of the phosphor layers is greater than that of the binder to the stimulable phosphor in other layers.

Arakawa et al. in analogous art of radiation image storage panel disclose (column 3 lines 30-37) that the radiation image storage panel is enhanced in both the

sharpness of an image provided thereby and the bonding strength by making the mixing ratio of the binder to the stimulable phosphor inside the phosphor layer smaller than the mixing ratio in the vicinity of the uppermost layer (interface between the protective film and the phosphor layer), that is by adjusting the distribution of the binder and the phosphor in such a manner that a larger amount of phosphor presents sufficiently inside the phosphor layer and a larger amount of binder is present in the interface at the top.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the amount by weight of binder to the stimulable phosphor in uppermost layer of Dooms et al. to be greater than that inside other phosphor layers as taught by Arakawa et al. for enhancing the sharpness and bonding strength of the radiation image conversion panel.

Referring to claim 4, Arakawa et al. disclose (column 5 lines 10-13) the stimulable phosphor is desired to give stimulated emission in the wavelength range of 300-500 nm when excited with stimulating rays in the wavelength range of 400 to 850 nm.

Referring to claim 5, Dooms et al. disclose (column 6 lines 54,55,66) bivalent europium-activated (doped) bariumfluorohalide phosphors are used in radiation image storage panels.

Regarding claim 7, Dooms et al. disclose(column 16 lines48,49, column 17 lines 1,2) the binding medium consists of elastomeric polymer selected from the group consisting of thermoplastic elastomers.

Regarding claim 8, Dooms et al. disclose (column 3 lines 49-60) preferred elastomers are thermoplastic block copolymers with elastomeric or rubbery properties. The rubbery block co-polymers include styrene-butadiene rubber which allows the phosphor to binder volume ratio amount to be enhanced with preservation of the elasticity of screen, avoiding brittleness and providing enhanced sharpness and sensitivity.

Regarding claims 2 and 3, Dooms et al. in view of Arakawa et al. disclose the claimed invention except for the limitation of amount by weight of the binder to the stimulable phosphor in uppermost layer is greater than that of the binder to the phosphor in other layers by at least 0.5 wt% (claim 2) and by 1 to 100 wt % (claim 3). It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the limitation of amount by weight of the binder to the stimulable phosphor in uppermost layer is greater than that of the binder to the phosphor in other layers by at least 0.5 wt% (claim 2) or by 1 to 100 wt % (claim 3), since optimization of workable ranges is considered within the skill of the art.

Regarding claim 6, Dooms et al. disclose (column 6 lines6,7) the average grain sizes of the phosphor particles being in the range of 2 to 20 μm. Dooms et al. and Arakawa et a. disclose the claimed invention except for the limitation of grain size of phosphor particles being from 1 to 15 μm. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable

ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the grain size of phosphor ranging from 1 to 15 μm, since optimization of workable ranges is considered within the skill of the art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to radiation image converting panels.

U. S. Patent No. 5,591,982 to Kohda.

U. S. Patent No.5,743,977 to Suzuki et al.

U. S. Patent No. 5,877,504 to Yanagita et al.

U. S. Patent No. 5,877,503 to Neriishi.

JP 08120264 A to Hasegawa.

EP 866469 A1 to Van den Bergh.

JP 2001042096 A to Suzuki et al.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R

Sikha Roy
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